

Allotype: Female; the specimen bears the same data as the type. This specimen is slender and colored much as the type. Otherwise it is inseparable from the same sex of *aculeata*.

In addition to the type and allotype we have three males, nine females and two nymphs, bearing the same data as the type, which may be considered paratypes.

MEASUREMENTS¹ (IN MILLIMETERS).

	Type, Male.	Paratype Male.	Allotype, Female.	Paratype Female.
Length of body.	11	11.6	8.3	8.5
Length of pronotum. . . .	1.9	1.9	1.6	1.6
Length of tegmen.	3	2.7	2.1	2.6
Length of forceps.	8.7	6.6	3.3	3.5
Length of pygidial spine	2.2	1.8	—	—

The present species appears to be the extreme development from a common ancestor with *D. aculeatum*. The tremendously produced pygidial spine is found in another otherwise very different species, *Doru spiculiferum* Kirby, described from New South Wales, Australia.

RECORDS OF DERMAPTERA AND ORTHOPTERA FROM WEST CENTRAL AND SOUTHWESTERN FLORIDA, COLLECTED BY WILLIAM T. DAVIS.

BY JAMES A. G. REHN AND MORGAN HEBARD.

PHILADELPHIA, PA.

In the past two years Mr. Wm. T. Davis, of New Brighton, Staten Island, has submitted to us for examination several series of Dermaptera and Orthoptera taken by him in northern, west central and southwestern Florida. The present paper is an annotated list of the material secured by him in west central and southwestern Florida, the records from northern Florida not being included, as the authors are at present engaged in studying an extensive series from that region and the adjacent portion of Georgia.

¹ These measurements indicate decided variability in the species when the differences between the two known males are noted.

The series here treated comprises six hundred and eight specimens of one hundred and four species, one of which has proved to be new. Many of the records here given are of particular interest as the range of a number of species is extended by the same, while quite a few of the forms represented are but little known and scarce, both in collections and in nature. In addition to this collection a small series of twenty-two specimens, collected by Dr. J. Chester Bradley in the same region, is recorded in this paper.

The authors wish to thank Mr. Davis for his courtesy in permitting them to examine the material here treated, and also for allowing a representation to be retained for the collections of the Academy of Natural Sciences of Philadelphia and the Hebard Collection.

Throughout the present paper the notes in quotation marks have been inserted by the collector, Mr. Davis.

FORFICULIDÆ.

Anisolabis annulipes (Lucas).

Lakeland, Fla., March 28, 1912; 1 female.

La Belle, Fla., April 27, 1912; 1 female.

Everglade, Fla., April, 1912; 2 females.

Anisolabis maritima (Géné).

Useppa, Lee County, Fla., April, 1912; 1 female.

Labidura bidens (Olivier).

Lakeland, Fla., Nov. 8, 1911; 1 female; May 6, 1912; 1 female.

Long Boat Key, Fla. (J. C. Bradley), 1 nymph.

Punta Gorda, Fla., Nov. 16, 1911; 2 males, 2 females.

Fort Myers, Fla., April 23, 1912; 1 female.

Exceedingly great variation in size is shown in the four females before us; the largest, from Fort Myers, being 18.3 mm. in body length, while the length of the smallest, from Lakeland, is but 13.2 mm.

Prolabia unidentata (Beauv.).

Punta Gorda, Fla., Nov. 13, 1911; 1 female: (Charlotte Harbor) (Slosson), 1 male, 4 females. [Scudder Collection.]

Marco, Fla., April 20, 1912; 1 male, 1 female.

All of these specimens belong to the usual apterous form.

Doru davisi R. and H.

South Bay, Lake Okeechobee, Fla., May 1, 2, 1912; 4 males, 10 females, 2 nymphs.

These specimens, including the type of the species, have recently been fully treated and described in the present Journal.

"A winding path led along the shore of South Bay, Lake Okeechobee, between the water and the thick growth of Custard-apple trees, and on the low tangled vegetation bordering this path we found *Doru davisii* in considerable numbers."

BLATTIDÆ.

Ischnoptera nigricollis Walker.

Lakeland, Fla., May 7, 1912; 1 male.

Long Boat Key, Fla. (J. C. Bradley), 1 male.

La Belle, Fla., April 27, 1912; 1 female.

Citrus Center, Fla., May 2, 1912; 1 male.

South Bay, Lake Okeechobee, Fla., April 30, 1912; 1 male.

Marco, Fla., April 17, 1912; 1 male.

Chokoloskee, Fla., April 8, 1912; 1 female.

Everglade, Fla., April, 1912; 2 males, 1 female. (Trapped.)

Ischnoptera coulöniana (Sauss.).

Fort Myers, Fla., March 30, 1912; 1 female.

This specimen has the tegmina subquadrate, with the distal margins quite obliquely subtruncate; this is very different from the normal type of tegmina which is subquadrato-ovate.

The present record is the most southern known for the species.

Ischnoptera uhleriana fulvescens S. and Z.

Lakeland, Fla., May 4, 8, 1912; 2 females: Nov. 10, 1911; 5 nymphs.

Long Boat Key, Fla. (J. C. Bradley), 1 male.

Punta Gorda, Fla., Nov. 13, 14, 15, 1911; 4 nymphs.

*Neoblattella detersa*¹ (Walker).

Lakeland, Fla., May 5, 1912; 1 male.

Everglade, Fla., April 9, 1912; 1 male.

These west coast specimens of the present West Indian species of insect are of particular interest in showing that it is widely distributed throughout southern Florida. The Lakeland record extends the previously known range considerably northward.

Ceratinoptera diaphana (Fabr.).

Lakeland, Fla., March 28, 1912.

Fort Myers, Fla., April 2, 1912.

¹ See Proc. Acad. Nat. Sci. Phila., 1914, p. 379.

***Ceratinoptera lutea* S. and Z.**

Lakeland, Fla., Nov. 8, 9, 1911, May 8, 1912; 1 male, 2 females.

Punta Gorda, Fla., Nov. 15, 16, 1911; 1 male, 1 female, 1 nymph.

Fort Myers, Fla., April 26, 1912; 1 male.

Citrus Center, Fla., May 2, 1912; 1 male.

South Bay, Lake Okeechobee, Fla., April 30, May 1, 1912; 1 male, 1 female.

Everglade, Fla., April, 1912; 1 female (trapped): April 9, 13, 1912; 3 females.

"This and other species of cockroaches were taken in some numbers along Allen's River, Everglade, Lee Co., Fla., in jars baited with the ordinary sugar mixture."

***Eurycotis floridana* (Walker).**

Lakeland, Fla., Nov. 8, 1911; 2 nymphs.

Punta Gorda, Fla., Nov. 11, 13, 15, 1911; 1 male, 2 females.

La Belle, Fla., April 27, 1912; 1 female.

Marco, Fla., April 17, 1912; 1 male.

Everglade, Fla., April 9, 1912; 1 male.

"At night, with the aid of a lantern, this large roach was often found walking about on low bushes, etc., for it is a fair climber in spite of its clumsy appearance."

***Periplaneta americana* (Linn.).**

Lakeland, Fla., Nov. 7, 1911; 1 male (in hotel).

Everglade, Fla., April 5, 1912; 1 male.

***Periplaneta australasica* (Fabr.).**

Punta Gorda, Fla., Nov. 14, 15, 1911; 3 males, 1 nymph.

South Bay, Lake Okeechobee, Fla., May 2, 1912; 1 female.

Allen River to Deep Lake, Fla., April 12, 1912; 1 male.

Everglade, Fla., April 5, 1912; 2 males.

***Periplaneta brunnea* (Burm.).**

Punta Gorda, Fla., Nov. 15, 1911; 1 nymph.

Fort Myers, Fla., April 1, 1912; 1 female.

La Belle, Fla., April 27, 1912; 1 male.

***Pycnoscelus surinamensis* (Linn.).**

Punta Gorda, Fla., Nov. 13, 1911; 2 females, 1 nymph (under board).

Fort Myers, Fla., April 23, 1912; 1 female.

La Belle, Fla., April 27, 1912; 1 nymph.

Everglade, Fla., April 16, 1912; 1 male.

"At Punta Gorda there was a vacant house at the end of the town frequented at night by a Nanny and Billy goat, and on warm evenings many *Periplaneta australasiae* would run about on the piazza floor and on the sides of the house. They were seen feeding on the excrement of the goats and were no doubt to a great degree dependent upon them."

Chorisoneura plocea Rehn.

Lakeland, Fla., May 5, 1912; 1 female.

MEASUREMENTS (IN MILLIMETERS).

	Female.
Length of body	8.4
Length of pronotum	2.1
Greatest width of pronotum	3.
Length of tegmen	7.4
Greatest width of tegmen	2.9

MANTIDÆ.

Stagmomantis carolina (Johannson).

Punta Gorda, Fla., Nov. 13, 1911; 1 female.

South Bay, Lake Okeechobee, Fla., May 1, 1912; 1 very small nymph.

Marco, Fla., April 17, 1912; 1 nymph.

The adult female is the largest specimen of this species we have seen.

MEASUREMENTS (IN MILLIMETERS).

	Female.
Length of body	75.
Length of pronotum	27.5
Greatest width of pronotum	4.9
Length of tegmen	23.
Length of cephalic femur	18.
Length of caudal femur	22.9

Gonatista grisea (Fabr.).

Lakeland, Fla., May 6, 1912; 1 male.

Everglade, Fla., June, 1912; 1 nymph.

Thesprotia graminis (Sc.).

Lakeland, Fla., Nov. 10, 1911; 2 females.

Long Boat Key, Fla. (J. C. Bradley); 1 male.

Punta Gorda, Fla., Nov. 11, 1911; 2 females.

La Belle, Fla., April 27, 1912; 1 male.

South Bay, Lake Okeechobee, Fla., May 1, 1912; 1 female.

Everglade, Fla., April 11, 1912; 1 male.

The largest specimen of the series is from Punta Gorda, measuring 60.5 mm. in length.

PHASMIDÆ.

Manomera tenuescens (Sc.).

Lakeland, Fla., Nov. 8, 1911; 1 female.

Punta Gorda, Fla., Nov. 16, 1911; 1 male.

Allen River to Deep Lake, Fla., April 12, 1912; 1 male.

Manomera brachypyga R. and H.¹

La Belle, Fla., April 27, 1912; 1 female, 1 nymph.

Marco, Fla., April 20, 1912; 1 male, 1 female.

This species, recently described¹ from Southeastern Florida, appears to be distributed like the preceding species over the greater part of the state.

Aplopus mayeri Caudell.

Everglade, Fla., April 10, 1912; 1 female.

This is the first record of the present species from the mainland of Florida.

The specimen before us is armed on the ventral surface of the median and caudal femora with 5-7 and 7-7 spines respectively; all of the females before us from Loggerhead Key, Dry Tortugas, have these margins armed with 4, very seldom 5, spines.

"The fact that this species had not been recorded from the mainland of Florida was realized when it was beaten into an umbrella from the branch of a large tree growing on the edge of the low ground at Everglade, Lee Co., and considerable effort was made to find other specimens, but without success."

Anisomorpha buprestoides (Stoll).

Punta Gorda, Fla., Nov. 16, 1911; 1 very small nymph.

Citrus Center, Fla., May 2, 1912; 1 male, 1 female nymph.

Everglade, Fla., April 7, 1912; 1 female.

"When disturbed this insect shoots from two pores on the prothorax a milky fluid that smarts considerably when it touches one's

¹ 1914. Proc. Acad. Nat. Sci. Phila., 1914, p. 384.

face, and would undoubtedly cause much irritation if received in the eyes. The female of the species being much larger than the male, has a more powerful and copious battery at her command."

ACRIDIDÆ.

Nomotettix floridanus Hanc.

Lakeland, Fla., May 8, 1912, Nov. 9, 10, 1911, 2 males, 4 females, 1 female nymph.

Fort Myers, Fla., March 31, April 23, 1912; 3 females.

La Belle, Fla., April 27, 1912; 1 male.

The present form may be separated from New England representatives of *N. cristatus* by the following characters: vertex less elevated above the eyes; fastigium more acute in lateral aspect; tegmina smaller and more abbreviate; median femora narrower with dorsal margin showing a faint sinuation.

Acrydium blatchleyi Hanc.

Deep Lake, Fla., April 13, 1912; 2 females.

The present species appears to be very distinct from its nearest ally, *A. gibbosus*. This is the first record of the species since it was described from two females, taken at Ormond, Florida, on April 9, 1899, by W. S. Blatchley.

The specimen before us is wholly typical except that it is slightly smaller than the types.

MEASUREMENTS (IN MILLIMETERS).

	Female.
Length of body	9.
Length of pronotum	8.6
Length of tegmen	1.4
Length of caudal femur	5.

Neotettix femoratus (Sc.).

Lakeland, Fla., May 5, 1912; Nov. 10, 1911; 2 males, 2 females.

Punta Gorda, Fla., Nov. 14, 1911; 1 male, 1 female. 1 male, elongate type.

Fort Myers, Fla., March 31, April 23, 26, 1912; 2 males, 1 female.

La Belle, Fla., April 27, 28, 1912; 1 male, 2 females.

Neotettix coarctatus Hanc.

Punta Gorda, Fla., Nov. 12, 14, 16, 1911; 5 males, 13 females, 1 male nymph, 8 female nymphs. 3 males, 4 females, elongate type.

Fort Myers, Fla., April 23, 26, 1912; 1 male, 3 females.

South Bay, Lake Okechobee, Fla., April 30, 1912; 1 female.

Paratettix rugosus (Sc.).

Lakeland, Fla., Aug. 16, 1910 (J. C. Bradley), 1 male: Nov. 9, 1911; 1 female.

Long Boat Key, Fla., (J. C. Bradley), 1 male, 1 female.

Punta Gorda, Fla., Nov. 12, 16, 1911; 13 males, 16 females.

South Bay, Lake Okeechobee, Fla., April 30, 1912; 1 female.

Deep Lake, April 13, 1912; 1 female.

Everglade, Fla., May, 1912; 1 male.

Tettigidea lateralis (Say).

Lakeland, Fla., May 4, 1912, Nov. 8, 9, 10, 1911; 4 males, 10 females, 5 female nymphs.

Punta Gorda, Fla., Nov. 12, 14, 16, 1911; 9 males, 14 females, 8 female nymphs.

Fort Myers, Fla., March 30, April 23, 1912; 3 females.

Everglade, Fla., May, 1912; 1 female.

All of the adults in the present series are of the elongate type.

Tettigidea spicata Morse.

South Bay, Lake Okeechobee, Fla., May 1, 1912; 1 female.

Everglade, Fla., May, 1912; 2 females.

Tettigidea armata Morse.

Deep Lake, April 13, 1912; 1 male, 1 female.

Radnotatum brevipenne peninsulare R. and H.

Long Boat Key, Fla. (J. C. Bradley), 1 female.

Punta Gorda, Fla., Nov. 14, 1911; 1 female.

Fort Myers, Fla., March 31, 1912 (nymphal), April 23, (adult); 2 females.

La Belle, Fla., April 27, 1912; 1 male.

Marco, Fla., April 19-21, 1912; 1 male, 3 females (one pair in coitu).

Allen River to Deep Lake, Fla., April 12, 1912; 1 female.

These specimens are typical of the race *peninsulare*. In addition we have examined in Mr. Davis' series two males and four females from Lakeland (May 7-8, 1912, and November 7-10, 1911), which are absolutely intermediate between typical *brevipenne* and *b. peninsulare* in character.

***Truxalis brevicornis* (Johannson).**

Everglade, Fla., July, 1912; 1 female.

This is the largest individual of the species we have seen, a series of forty-four females from localities ranging from New Jersey to Buenos Aires, Argentina, containing none equalling the present specimen in size. The principal measurements are as follows: length of body, 39.5 mm.; length of pronotum, 7.8; length of tegmen, 38; length of caudal femur, 25.

***Mermiria intertexta* Sc.**

Punta Gorda, Fla., Nov. 15, 1911 (C. W. Leng); 1 female.

Everglade, Fla., July, 1912; 1 female.

***Macneillia obscura* (Sc.)**

Lakeland, Fla., Nov. 8, 1911; 1 female.

This specimen has a complete dorsal medio-longitudinal pinkish buff line of subequal width.

***Amblytropidia occidentalis* (Sauss.).**

Lakeland, Fla., March 29, 1912, Nov. 9, 1911; 1 male, 1 female.

Fort Myers, Fla., April 24, 1912; 1 male.

Marco, Fla., April 20, 1912; 1 male.

Everglade, Fla., April 11, 1912; 1 female.

Deep Lake, Fla., April 13, 1912; 2 males.

A Deep Lake male is the smallest of that sex, while the one from Marco is the largest. The two females are of nearly equal size, agreeing with a Tampa female in this respect.

***Orphulella pelidna* Burm.**

Lakeland, Fla., Nov. 8, 1911; 2 males, 3 females; May 4-8, 1912, 2 males, 2 females.

Punta Gorda, Fla., Nov. 11-13, 1911; 3 males, 2 females, 2 nymphs.

Fort Myers, Fla., March 30, 1912; 1 male; April 24, 1912, 1 male.

La Belle, Fla., April 27, 1912; 1 male, 5 females.

South Bay, Lake Okeechobee, Fla., 1912, May 1, 1912; 1 male, 1 female.

Deep Lake, Fla., April 13, 1912; 2 males.

***Dichromorpha viridis* (Sc.).**

Lakeland, Fla., May 4, 1912, Nov. 7-9, 1911; 2 males, 7 females.

Punta Gorda, Fla., Nov. 11 and 16, 1912; 2 males, 2 females.

Fort Myers, Fla., April 23, 1912; 1 male.

La Belle, Fla., April 27, 1912; 1 female.

Citrus Center, Fla., May 2, 1912; 1 male, 1 female.

South Bay, Lake Okeechobee, April 29, 1912; 1 male.

Deep Lake, Fla., April 13, 1912; 1 female.

The females represent the dark brown phase, the pale brown phase and the green phase; the males are of the entirely green phase, the green dorsum phase and the pale dorsum phase. The Lakeland series represents all of these phases except the pale brown phase of the male. The entirely green phase of the male is found in only a single Lakeland specimen and this condition is apparently quite unusual judging by the series in our collections. Individually the present series shows considerable variation in size.

***Clinocephalus elegans pulcher* R. and H.**

Lakeland, Fla., Nov. 9, 1911; 1 female.

Long Boat Key, Fla. (J. C. Bradley); 2 males, 1 female.

Everglade, Fla., May, 1912; 1 female.

These specimens are typical of the race *pulcher*.

***Arphia granulata* Sauss.**

Lakeland, Fla., May 6, 1912, Nov. 8, 1911; 2 males.

Punta Gorda, Fla., Nov. 17, 1911; 1 female.

Fort Myers, Fla., April 25, 1912; 1 male.

La Belle, Fla., April 27, 1912; 1 male.

Marco, Fla., April 17, 1912; 1 male.

The Punta Gorda female is quite blackish in general dorsal color, the caudal femora drab proximad and with the usual two dark bands (mesad and distad) strongly indicated dorsad, the distal one of these equally indicated laterad. The Lakeland and La Belle individuals are quite reddish, varying in general tone from kaiser brown to chestnut, while the Fort Myers and Marco specimens approach cinnamon-brown in general color, with the face and part of the genæ buckthorn brown. The reddish and brownish individuals have the usual two distal femoral bars indicated more or less distinctly dorsad, but only faintly or not at all so laterad.

***Chortophaga australior* R. and H.**

Lakeland, Fla., May 4, 1912, Nov. 8, 1911; 2 males, 1 female.

Sarasota, Fla., Aug. 14, 1900 (J. C. Bradley), 2 males, 3 females.

Long Boat Key, Fla. (J. C. Bradley), 2 males, 2 females.

Punta Gorda, Fla., Nov. 11-17, 1911; 4 males, 2 females.

Fort Myers, Fla., April 26, 1912; 1 female.

La Belle, Fla., April 27, 1912; 1 male, 1 female.

Marco, Fla., April 17, 1912; 1 male.

Everglade, Fla., May, 1912; 1 female.

Deep Lake, Fla., April 13, 1912; 1 female.

The green phase is represented by four females from Lakeland, Punta Gorda, Fort Myers and La Belle. The other Punta Gorda specimen of that sex has the discoidal trunk of the tegmina greenish.

Hippiscus phoenicopterus (Burm.).

Lakeland, Fla., May 7, 1912; 1 male.

The present specimen has the dorsal and ventral lamellate carinations of the caudal femora considerably more pronounced than in northern specimens of the species. This character may be racial, but we wish to defer comment until more material from central Florida is available.

Scirtetica marmorata picta (Sc.).

Lakeland, Fla., May 5, 1912, November 8-10, 1912; 3 males, 2 females.

Fort Myers, Fla., March 30, 1912; 1 male.

Marco, Fla., April 18, 1912; 1 male, 1 female.

One Lakeland male is distinctly smaller than any other individual of that sex seen by us. In general coloration this specimen shades from buff-pink on the face and genæ to walnut brown on the tegmina, the usual maculations of the latter but faintly indicated, the caudal femoral bars decided, but only on the dorsal face.

Psinidia fenestralis (Serv.).

Lakeland, Fla., March 28, May 4, 1912, Nov. 18, 1911; 3 males, 1 female.

Fort Myers, Fla., April 25, 1912; 1 female.

La Belle, Fla., April 27, 1912; 1 male.

Trimerotropis citrina Sc.

St. Petersburg, Fla., Aug. 12, 1910 (J. C. Bradley), 1 male.

Fort Myers, Fla., April 23, 1912; 1 male.

Romalea microptera (Beauv.).

Punta Gorda, Fla., Nov. 15, 1911; 1 male.

La Belle, Fla., April 28, 1912; 1 male.

Citrus Center, Fla., May 2, 1912; 1 male.

"The Species was found in numbers at Punta Gorda in November, 1911, but was not common at any of the localities visited in the spring of 1912. At Punta Gorda they were feeding on a papilionaceous plant along an old railroad embankment and when disturbed would walk off in an amusingly stately, dignified manner. This lubber grasshopper can make a hissing sound, which is produced by the air being forced from the large stigmata near the base of the wings. This was more particularly noticed in recently matured individuals."

Leptysma marginicollis (Serv.).

Lakeland, Fla., May 7, 1912; 1 male.

Fort Myers, Fla., April 23, 1912; 1 male.

Citrus Center, Fla., May 2, 1912; 1 male.

Marco, Fla., April 20, 1912; 1 female.

Allen River to Deep Lake, Fla., April 12, 1912; 1 female.

Everglade, Fla., April 5, 1912; 1 male.

Stenacris vitreipennis (Marschall).

Arnilia chlorizans of authors.

Lakeland, Fla., Nov. 7, 10, 1911; 1 male, 3 females, 1 nymph.

Punta Gorda, Fla., Nov. 11, 13, 17, 1911; 4 males, 3 females.

Fort Myers, Fla., April 1, 1912; 1 male.

Citrus Center, Fla., May 2, 1912; 1 male.

South Bay, Lake Okeechobee, Fla., April 29, May 1, 1912; 1 male, 1 female.

Schistocerca alutacea (Harris).

Punta Gorda, Fla., Nov. 15, 17, 1911; 1 male, 1 female.

These specimens are both of the brown phase.

Schistocerca obscura (Fabr.).

Lakeland, Fla., Nov. 7, 1911; 1 female.

Punta Gorda, Fla., Nov. 11, 15, 1911; 2 males.

Schistocerca americana (Drury).

Long Boat Key, Fla. (J. C. Bradley), 1 male.

La Belle, Fla., April 27, 1912; 1 male.

South Bay, Lake Okeechobee, Fla., May 1, 1912; 1 female.

Puntarassa, Fla., April 3, 1912; 1 female.

Schistocerca damnifica calidior R. and H.

Lakeland, Fla., Nov. 7, 9, 1911, May 6, 1912; 3 females.

La Belle, Fla., April 27, 1912; 1 male.

Marco, Fla., April 21, 1912; 1 male.

Gymnoscirtetes pusillus Sc.

Lakeland, Fla., Nov. 9, 1911; 1 female.

This species has previously been recorded only from northern Florida and southern Georgia.

Eotettix signatus Sc.

Lakeland, Fla., Nov. 10, 1911; 1 female.

Melanoplus puer Sc.

Lakeland, Fla., May 8, 1912, Nov. 8, 10, 1911; 6 males, 1 female.

Punta Gorda, Fla., Nov. 11, 13, 14, 1911; 5 males, 2 females, 1 male nymph, 1 female nymph.

Fort Myers, Fla., April 1, 1912; 1 male nymph.

Marco, Fla., April 19, 1912; 1 male.

"At Lakeland *Melanoplus puer* was not uncommon in a field overgrown with *Eupatorium capillifolium*."

Melanoplus rotundipennis Sc.

Lakeland, Fla., May 4, 5, 1912, Nov. 7, 1911; 1 male, 2 females.

Melanoplus propinquus Sc.

Lakeland, Fla., Nov. 7, 8, 9, 1911, May 4, 5, 1912; 4 males, 4 females.

Marco, Fla., April 18, 1912; 1 male.

Melanoplus keeleri (Thomas).

Lakeland, Fla., Nov. 8, 1911; 1 male, 1 female.

Paroxya atlantica Sc.

Lakeland, Fla., Nov. 10, 1911, May 8, 1912; 2 males.

Punta Gorda, Fla., Nov. 11, 13, 16, 1911; 4 males.

Fort Myers, Fla., April, 1912; 1 male.

La Belle, Fla., April 28, 1912; 1 male.

Citrus Center, Fla., May 2, 1912; 1 male, 1 female.

South Bay, Lake Okeechobee, Fla., April 29, 1912; 1 male.

Marco, Fla., April 17, 1912; 1 male.

Allen River to Deep Lake, Fla., April 12, 1912; 1 male.

Deep Lake, Fla., April 13, 1912; 1 female.

Everglade, Fla., April 11, 1912; 1 male.

No approach to *P. atlantica paroxyoides* is shown in the above series, all of the specimens belonging to the smaller, more attenuate south Florida type of *atlantica*.

Paroxya floridiana (Thom.).

Citrus Center, Fla., May 2, 1912; 1 female.

South Bay, Lake Okeechobee, Fla., May 2, 1912; 1 female.

Allen River to Deep Lake, Fla., April 12, 1912; 1 male.

Everglade, Fla., April 6, 1912; 1 male.

Aptenopedes clara Rehn.

Lakeland, Fla., May 7, 1912, Nov. 7-10, 1911; 12 males, 8 females,
1 male nymph.

Punta Gorda, Fla., Nov. 11-16, 1911; 4 males, 4 females.

Fort Myers, Fla., March 30, 1912; 1 male.

La Belle, Fla., April 28, 1912; 1 male.

Marco, Fla., April 20, 1912; 1 female.

The series from Lakeland is not typical as all of the specimens show, to a moderate degree, an approach to *A. sphenarioides*. The furcula in some cases are narrow and noticeably produced, the supra-anal plate is frequently somewhat narrower than in typical *clara* and the cerci are much shorter with the falcate distal portion greatly modified. The evidence strongly indicates that material from north central Florida will prove to be intermediate between *sphenarioides* and *clara*, and the latter will therefore prove to be a geographic race.

Aptenopedes aptera Sc.

Tampa, Fla., Nov. 23, 1911 (Engelhardt); 1 male. [Museum Brooklyn Inst. Arts and Sci.]

Punta Gorda, Fla., Nov. 14, 1911; 1 male, 1 female.

Marco, Fla., April 19, 1912; 1 female.

TETTIGONIIDÆ.**Arethaea phalangium** (Sc.).

Fort Myers, Fla.,¹ April 23, 1912; 1 female nymph.

Scudderia texensis Sauss. and Pictet.

Lakeland, Fla., Nov. 7, 1911; 1 female.

Fort Myers, Fla., April 24, 1912; 1 male.

La Belle, Fla., April 27-28, 1912; 1 male, 1 female.

Marco, Fla., April 21, 1912; 1 male.

Scudderia furcata Brunner.

Lakeland, Fla., May 7, 1912; 1 male.

¹ Vide Trans. Amer. Entom. Soc., XL, p. 141.

This is the first exact record of the species from Florida south of Jacksonville.

Amblycorypha floridana R. and H.

La Belle, Fla., April 27, 1912; 1 female.

Citrus Center, Fla., May 2, 1912; 1 male, 1 female.

South Bay, Lake Okeechobee, Fla., April 29-30, 1912; 1 male, 1 female.

These specimens are typical of the species.

Microcentrum rhombifolium (Sauss.).

Punta Gorda, Fla., Nov. 17, 1911; 1 female.

Fort Myers, Fla., March 31 and April 2, 1912; 2 males.

Microcentrum rostratum R. and H.

Punta Gorda, Fla., Nov. 11-17, 1911; 2 males, 1 female, 1 female nymph.

Puntarassa, Fla., April 3, 1912; 1 male.

Everglade, Fla., April 5, 1912; 1 female.

While fully typical of the species these individuals are all slightly larger than Miami and Key West specimens.

"At Punta Gorda this insect was not uncommon in a clump of mangroves and the males were captured at night by following up their short *click click* song, the notes of which were often uttered close together."

Stilpnochlora marginella (Serv.).

Fort Myers, Fla., March 31, 1912 (at light); 1 male.

This specimen is very slightly larger than a male, labelled "Fla.," in the collection of the Academy of Natural Sciences of Philadelphia.

"This species cannot be very uncommon at Fort Myers, for several of them were attracted to a strong electric light on the edge of the town, though I was able to secure but one male."

Belocephalus sabalis Davis.¹

Originally described from Punta Gorda, Fla., on the basis of material collected in November, 1911, this species is now known to range considerably to the southward.

Belocephalus hebardi Davis.²

This species was described from material collected at Punta Gorda, Fla., in November, 1911.

¹ Journ. N. Y. Entom. Soc., XX, p. 123.

² *Ibid.*, p. 123.

Pyrgocorypha uncinata (Harris).

Marco, Fla., April 17, 1912; 1 male.

Chokoloskee, Fla., April 8, 1912; 1 male.

Everglade, Fla., April 11, 1912; 1 male.

"The Chokoloskee male was found hidden away in the day time among some dead leaves on a branch of an alligator-pear tree lying on the ground and was so active when disturbed that it would probably have escaped if it hadn't been somewhat deformed. The individuals from Marco and Everglade were collected at night, attention being drawn to them by their song which resembles *azik, azik, azik, azik*. They were very shy when singing and difficult to capture."

Neoconocephalus mexicanus (Sauss.).

Fort Myers, Fla., April 23, 1912; 1 female.

South Bay, Lake Okeechobee, Fla., April 30, 1912; 1 female.

Marco, Fla., April 17, 1912; 1 male.

Allen River to Deep Lake, Fla., April 12, 1921; 1 female.

Everglade, Fla., April 5 and 7, 1912; 1 male, 1 female.

The Fort Myers female and the Everglade male are of the brown phase (*fusco-striatus*). The Marco male has the fastigium with no black, a condition noted by us in Costa Rican specimens of the species.

Homorocoryphus malivolans (Sc.).

Citrus Center, Fla., May 2, 1912; 2 males.

These specimens fully agree with the male of the species from Detroit, Dade County, Florida, recently recorded by us.¹

Odontoxiphidium apterum Morse.

Lakeland, Fla., Nov. 7-10, 1911; 5 males, 4 females.

Punta Gorda, Fla., Nov. 16, 1911; 1 female.

The Punta Gorda female has the ovipositor relatively very long, about one and one-half times the body length. The Lakeland females have the ovipositor length varying from somewhat shorter than the length of the body to one and one third times the same. The United States National Museum collection contains two males of this species from Lemon City (E. J. Brown) and Fort Drum (Sept. 20, 1903; A. Fredenholm), Florida.

Orchelimum glaberrimum (Burm.).

Everglade, Fla., July, 1912; 1 male, 1 female.

This is the most southern record of the species in Florida. The

¹ Proc. Acad. Nat. Sci. Phila., 1914, p. 405.

female specimen has the head entirely deep red, while the male shows evidence of similar coloration in life.

Orchelimum molossum R. and H.

Lakeland, Fla., Nov. 7-10, 1911; 8 males, 2 females.

Everglade, Fla., May, 1912, July; 1 male, 1 female.

These records are the most southern known for the species.

"The song is quite like that of *Orchelimum vulgare* Harris of the northeastern states."

Orchelimum pulchellum Davis.

Lakeland, Fla., Nov. 7, 1911; 2 males.

Orchelimum concinnum Sc.

Punta Gorda, Fla., Nov. 16, 1911; 1 male.

Fort Myers, Fla., April 23, 1912; 1 male, 1 female.

South Bay, Lake Okeechobee, Fla., April 30, 1912; 2 males, 1 female.

The facial maculation is decided in the Punta Gorda specimen and weakly or moderately indicated in the others.

Conocephalus gracillimus (Morse).

Tampa, Fla. (J. C. Bradley), 1 female.

St. Petersburg, Fla. (J. C. Bradley), 1 male.

Punta Gorda, Fla., Nov. 13-15, 1911; 1 male, 2 females.

The Punta Gorda male is quite small. Tampa and the present localities are the only ones in western Florida from which the species is known.

Conocephalus fasciatus (DeGeer).

Lakeland, Fla., May 7, 1912, Nov. 7-10, 1911; 11 males, 8 females.

Tampa, Fla. (J. C. Bradley), 2 females.

Punta Gorda, Fla., Nov. 11-15, 1911; 1 male, 2 females.

Fort Myers, Fla., April 23, 1912; 2 males.

Several of the Lakeland specimens are quite purplish on the tegmina and in most of the Lakeland and Punta Gorda individuals the median dark bar on the head and pronotum is nearly solid or has the lateral margins strongly infuscate. One Lakeland female and the Fort Myers pair are yellowish and have the dark bar but weakly or not at all indicated.

These are the first records of the species from western Florida south of Cedar Keys and Gainesville.

Conocephalus spartinæ (Fox).

Everglade, Fla., April 9-11, 1912; 3 males, 3 females.

From this material it is evident that the present species ranges south to southern Florida and is also dimorphic in the length of the tegmina and wings. One pair from Everglade are of the normal brachypterous type, as seen when compared with the type and paratypes now before us, while the other two pairs are decidedly macropterous, the wings surpassing the tips of the caudal femora by at least the dorsal length of the pronotum. In this latter phase *spartinæ* strongly resembles *fasciatus* in superficial appearance.

Atlanticus glaber R. and H.

Marco, Fla., April 20-21, 1912; 1 male, 1 female.

This is the first record of this very interesting species since its description and the present material fully agrees with the type and allotype. In the male the coloration of the dorsum is a uniform russet, while the female has a narrow median line of blackish extending from the fastigium to the apex of the abdomen, this being divided mesad by a thread of the general color. The lateral pronotal lobes of the female show almost no infuscation.

The range of the species is now known to cover the southwestern as well as the southeastern portion of peninsular Florida.

"These insects were secured by treading closely and more or less shoving my feet through the tangled grass in a small, moist, fresh meadow in the interior of Key Marco."

GRYLLIDÆ.**Scapteriscus abbreviatus** Sc.

Fort Myers, Fla., March 31, April 23, 1912; 1 male, 1 nymph.

Ellipes minuta (Sc.).

Fort Myers, Fla., Nov. 14, 1911; 5 males, 1 female. Four are macropterous.

Cryptoptilum antillarum (Redt.).

Marco, Fla., April 17, 1912; 1 male.

Cryptoptilum trigonipalpus R. and H.

South Bay, Lake Okeechobee, Fla., May 1, 2, 1912; 4 males, 1 female.

Cycloptilum squamosum Sc.

Lakeland, Fla., May 5, 1912; 1 male, 1 female.

Nemobius fasciatus socius Sc.

Lakeland, Fla., May 4, 6, 7, 1912; 1 male, 2 females. 2 females, macropterous.

Fort Myers, Fla., March 30, 31, April 1, 22, 23, 26, 1912; 9 males, 12 females. 9 males, 11 females, macropterous.

Everglade, Fla., April 9, 1912; 2 males, 1 female. All brachypterous.

The large percentage of macropterous individuals in this series, practically 80 per cent., is unusual. One of the males from Everglade is exceptionally large.

Nemobius ambitiosus Ss.

Lakeland, Fla., March 28, 1912, May 4, 5, 8, 1912; 3 males, 4 females.

Fort Myers, Fla., April 26, 1912; 1 male.

La Belle, Fla., April 27, 1912; 1 male.

Nemobius cubensis Sauss.

Fort Myers, Fla., April 23, 1912; 1 male.

La Belle, Fla., April 27, 1912; 1 male.

South Bay, Lake Okeechobee, Fla., May 2, 1912; 1 male.

Everglade, Fla., April 7, 14, 1912; 2 females.

All of the above specimens are macropterous.

Nemobius carolinus Sc.

Lakeland, Fla., April 28, May 7, 1912; 1 male, 1 female.

Fort Myers, Fla., March 31, April 22, 23, 1912; 1 male, 3 females.

La Belle, Fla., April 27, 1912; 1 female.

Everglade, Fla., April 5, 11, 1912; 1 male, 1 female.

All of the specimens in the above series are macropterous with the exception of the single female from Everglade. This macropterous condition is predominant in southern Florida.

Miogryllus saussurei (Sc.).

Deep Lake, Fla., April 13, 1912; 2 males.

Both of these specimens are very dark in coloration, the dorsal portion of the head is uniform shining black.

Gryllus firmus Sc.

Rital, Fla., Nov. 18, 1911; 1 male.

Lakeland, Fla., Nov. 8, 9, 17, 1911; 1 male, 2 females.

Sarasota, Fla., Aug. 14, 1910 (J. C. Bradley), 1 female.

Punta Gorda, Fla., Nov. 13, 14, 15, 16, 1911; 3 males, 7 females.

La Belle, Fla., April 27, 1912; 1 female.

South Bay, Lake Okeechobee, Fla., May 1, 1912; 1 female.

Marco, Fla., April 19, 1912; 1 female.

Everglade, Fla., April 10, May, 1912; 2 females.

***Gryllus rubens* Sc.**

Lakeland, Fla., March 28, 1912, Nov. 7, 8, 9, 10, 1911; 4 males, 5 females.

Punta Gorda, Fla., Nov. 16, 1911; 1 female.

Fort Myers, Fla., March 30, 1912; 1 female.

South Bay, Lake Okeechobee, Fla., April 30, 1912; 1 female.

***Gryllodes sigillatus* (Walker).**

Lakeland, Fla., May 4, 1912; 1 male: Nov. 8, 1911; 1 nymph.

Fort Myers, Fla., April 1, 1912; 1 female (at light).

These records are the most northerly for the genus and species in the United States, secured under normal and unprotected conditions.

***Oecanthus angustipennis* Fitch.**

Lakeland, Fla., May 5, 1912, Nov. 10, 1911; 1 male, 2 nymphs.

This is the first Florida record of the species.

"This insect was identified in the field and considerable effort made to secure additional specimens, but they were uncommon."

***Oecanthus quadripunctatus* Beut.**

Lakeland, Fla., Nov. 8, 1911; 1 male.

Fort Myers, Fla., April 23, 1911; 1 male, 1 female.

The only previous Florida records of this species were from Cedar Keys and Pablo Beach (R. and H.).

***Anaxipha pulicaria* (Burm.).**

South Bay, Lake Okeechobee, Fla., May 1, 2, 1912; 1 male, 2 females.

***Cyrtoxipha gundlachi* Sauss.**

Punta Gorda, Fla., Nov. 13-17, 1911; 1 male, 6 females, 3 nymphs. Two marked "on Mangrove."

These specimens average smaller than the Key West and Miami individuals, otherwise they are inseparable.

***Hapithus quadratus* Sc.**

Lakeland, Fla., Nov. 9, 1911; 1 nymph.

Fort Myers, Fla., March 31, 1912; 1 female.

South Bay, Lake Okeechobee, Fla., May 1, 2, 1912; 3 males, 3 females.

Marco, Fla., April 17, 1912; 1 nymph.

Everglade, Fla., June 1912; 1 female.

***Orocharis saulcyi* (Guerin).**

Useppa Island, Lee County, Fla., April 1912; 1 male.

Everglade, Fla., April 6, 1912; 1 male, 1 female.

Useppa Island is the most northern locality from which this West Indian type has been recorded.

***Tafalisca lurida* Walker.**

Punta Gorda, Fla., Nov. 17, 1911; 1 nymph.

Naples, Fla. (Scudder Collection), 1 nymph.

Marco, Fla., April 17, 1912; 1 nymph.

The Marco specimen is a male in the instar preceding maturity, while the Punta Gorda nymph is a much less developed female.

THE CRANEFLIES COLLECTED IN COSTA RICA BY DR. P. P. CALVERT. (TIPULIDÆ, DIPTERA).

BY CHARLES P. ALEXANDER,

ITHACA, N. Y.

While collecting the dragonfly material for the *Biologia Centrali-Americana*, Dr. P. P. Calvert secured a very considerable number of specimens of other orders of insects. A few of the crane-flies that were taken have been considered by the author in other papers.¹ The majority of the new forms have been left for this paper, however, and a complete list of the material secured is herein included. The crane-flies of the collection form a small but interesting lot and I am indebted to Dr. Calvert and to Mr. E. T. Cresson, Jr., for the privilege of studying these forms. The type-material is in the collection of the American Entomological Society at the Academy of Natural Sciences, Philadelphia.

¹ *Vide* Bull. Brook. Ent. Soc., Vol. 8, Oct., 1912; Proc. U. S. Nat. Mus., Vol. 44, No. 1966, Apr., 1913.